

Amendments to the Claims

Claim 14 (currently amended). An apparatus for electroporation chamber for poration of biological particles, comprising:

~~walls defining~~ a fluid flow path;

electrodes disposed along sides of the fluid flow path, ~~the electrodes being in electrical communication with a source of electrical energy, whereby~~ and configured to subject biological particles moving along the fluid flow path ~~are subjected to an electrical field suitable for electroporation;~~ and

a computer-controllable pump in fluid communication with the fluid flow path and configured to establish a flow rate of the fluid flow path in accordance with a sample processing rate.

~~the apparatus being characterized by at least one of the walls defining the fluid flow path being elastically deformable and at least another one of the walls defining the fluid flow path being substantially rigid;~~

~~wherein the electrical energy is a variable flux.~~

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Claim 15 (currently amended). The ~~electroporation chamber~~ apparatus of Claim 14, wherein the electrical energy is pulsed.

Claim 16 (withdrawn).

Claim 17 (canceled).

Claim 18 (currently amended). The ~~electroporation chamber~~ apparatus of Claim 14, wherein the electrodes comprise continuous band electrodes.

Claim 19 (currently amended). The ~~electroporation chamber~~ apparatus of Claim 14, ~~wherein the electrodes further comprising thermoelectric cooling elements in operative relation with the electrodes function as a cooling device.~~

Claim 20 (currently amended). An apparatus for electroporation ~~chamber for poration of biological particles, the electroporation chamber being removably mounted to a support member, the electroporation chamber~~ comprising:

walls defining a fluid flow path;

electrodes disposed along sides of the fluid flow path, ~~the electrodes being in electrical communication with a source of electrical energy, whereby~~ and configured to subject biological particles moving along the fluid flow path ~~are subjected to an electrical field suitable for electroporation;~~ and

means ~~a mechanism~~ for breaking the electrodes prior to the apparatus being removed from the support member whereby the apparatus cannot be re-used;

~~wherein the mechanism includes means that are connected to the electrodes employed in the electroporation chamber when the chamber is mounted to a support member for destroying the electrodes prior to the chamber being removed from the support member;~~

~~wherein the electrical energy is a variable flux.~~

Claim 21 (currently amended). The ~~electroporation chamber~~ apparatus of Claim 20, wherein:

~~the electrodes are in electrical communication with a source of energy by a spindle;~~

the electrodes ~~being~~ are wrapped around at least a portion of ~~a the periphery of an associated spindle; and~~

~~wherein the means for breaking comprise spindles are~~ configured to rotate ~~rotated~~ so as to stretch the electrodes beyond their tensile limits, ~~thereby breaking~~ to break the electrodes and ~~rendering~~ render them electrically inoperative.

Claim 22 (currently amended). An apparatus for electroporation ~~chamber for poration of biological particles,~~ comprising:

walls defining a fluid flow path;

electrodes disposed along sides of the fluid flow path, ~~the electrodes being in electrical communication with a source of electrical energy, whereby~~ and configured to subject biological particles moving along the fluid flow path ~~are subjected to an electrical field suitable for electroporation;~~

a pump for moving the biological particles along the fluid flow path; and
a ~~controller~~ computer responsive to the rate at which the pump moves the biological particles along the fluid flow path and to the interval between pulses of electrical energy;
~~wherein the electrical energy is a variable flux.~~

Claim 23 (currently amended). The apparatus ~~electroporation chamber~~ of Claim 22, wherein the ~~controller~~ computer regulates the rate at which the pump moves the biological particles along the fluid flow path.

Claim 24 (currently amended). The apparatus ~~electroporation chamber~~ of Claim 22, wherein the ~~controller~~ computer regulates the interval between pulses of electrical energy.

Claims 25–26 (canceled).

Claim 27 (withdrawn).

Claims 28–29 (canceled).

Claim 30 (new). The apparatus of claim 30, the computer-controllable pump configured to vary the flow rate of the fluid flow path to match the sample processing rate.

Claim 31 (new). The apparatus of claim 1, the sample processing rate corresponding to a processing rate of a centrifuge.

Claim 32 (new). The apparatus of claim 1, the sample processing rate corresponding to an interval between pulses of electrical energy delivered to the electrodes.

Claim 33 (new). The apparatus of claim 1, where one of the walls defining the fluid flow path is elastically deformable and at least another one of the walls defining the fluid flow path is substantially rigid.

Claim 34 (new). An apparatus for electroporation, comprising:

- a fluid flow path;
- electrodes coupled to the fluid flow path and configured to subject biological particles moving along the fluid flow path to an electrical field suitable for electroporation;
- a pump configured to establish a flow rate of the fluid flow path; and
- a computer configured to:
 - a. control charging of the electrodes; and
 - b. establish a flow rate of the fluid flow path in accordance with a sample processing rate.

Claim 35 (new). The apparatus of claim 34, the sample processing rate corresponding to a processing rate of a centrifuge.

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cont Claim 36 (new). The apparatus of claim 34, the sample processing rate corresponding to an interval between pulses of electrical energy delivered to the electrodes.

Claim 37 (new). The apparatus of claim 34, the computer configured to control the thermoelectric cooling elements individually to cool one location more or less than another location.

Claim 38 (new). The apparatus of claim 34, further comprising:

- valves configured to control fluid flow;
- thermoelectric cooling elements; and
- wherein the computer is further configured to:
 - c. control operation of the valves; or
 - d. control the thermoelectric cooling elements.

Claim 39 (new). A method of incorporating a biologically-active substance into cells in a continuous flow system, comprising:

- a. introducing the cells into the continuous flow system;
- b. isolating the cells from at least some matter with which the cells are associated;

- c. mixing the cells with a biologically-active substance to provide a cell suspension;
- d. moving the cell suspension within the continuous flow system at a flow rate established by a computer-controllable pump to correspond to a sample processing rate;
- e. electroporating the cell suspension, thereby causing the biologically-active substance to be encapsulated in the cells; and
- f. incubating the cells to allow the cells to reseal to provide modified cells.

Claim 40 (new). The method of claim 38, further comprising:

- g. washing the modified cells to remove unencapsulated biologically-active substance therefrom.

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Claim 41 (new). The method of claim 38, the sample processing rate corresponding to a processing rate of a centrifuge.

Claim 42 (new). The method of claim 38, the sample processing rate corresponding to an interval between pulses of electrical energy to the electrodes.

Claim 43 (new). A method of incorporating a biologically-active substance into cells in a continuous flow system, comprising:

- a. introducing the cells into the continuous flow system;
- b. isolating the cells from at least some matter with which the cells are associated;
- c. mixing the cells with a biologically-active substance to provide a cell suspension;
- d. electroporating the cell suspension, thereby causing the biologically-active substance to be encapsulated in the cells;
- e. controlling individual thermoelectric cooling elements to cool portions of the continuous flow system; and
- f. incubating the cells to allow the cells to reseal to provide modified cells.

Claim 44 (new). The method of claim 42, further comprising:

- g. washing the modified cells to remove unencapsulated biologically-active substance therefrom.

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cont. Claim 45 (new). A method for rendering an electroporation apparatus non-operational, the method comprising automatically breaking an electrode prior to re-use.

Claim 46 (new). The method of claim 44, the method comprising rotating a spindle to stretch an electrode wrapped around the spindle so as to break the electrode.
